

Linzer biol. Beitr.	49/1	733-744	28.7.2017
---------------------	------	---------	-----------

A contribution to the knowledge of the Aphodiinae and Scarabaeinae fauna of Turkey (Coleoptera: Scarabaeoidea: Scarabaeidae)

Alper POLAT, Erol YILDIRIM & Stefano ZIANI

A b s t r a c t : This study is based upon material from subfamilies Aphodiinae and Scarabaeinae of the family Scarabaeidae collected from different localities of Turkey between 1966 and 2013. The study resulted in recording for Turkish fauna of 20 species and subspecies from 14 genera of Aphodiinae and 36 species and subspecies from 12 genera of Scarabaeinae. In total, 56 species and subspecies belonging to 26 genera of the subfamilies Aphodiinae and Scarabaeinae are listed. Among them, *Acanthobodilus immundus* (CREUTZER, 1799), *Aphodius fimetarius* (LINNAEUS, 1758), *Bodilus lugens* (CREUTZER, 1799) and *Coloboptyerus erraticus* (LINNAEUS, 1758) from Aphodiinae and *Gymnopleurus mopsus mopsus* (PALLAS, 1781), *Euoniticellus fulvus* (GOEZE, 1777), *Caccobius schreberi* (LINNAEUS, 1767), *Euonthophagus gibbosus* (SCRIBA, 1790), *Onthophagus (Palaeonthophagus) ruficapillus* BRULLÉ, 1832 and *Scarabaeus typhon* (FISCHER VON WALDHEIM, 1823) from Scarabaeinae have been found the most abundant and widespread species. In addition, new localities have been found for some species and subspecies, which have already been reported from Turkey.

Key words : Coleoptera, Scarabaeoidea, Scarabaeidae, Aphodiinae, Scarabaeinae, Fauna, Turkey.

Introduction

Scarabaeidae is a very large family of beetles of which are known roughly 1.600 genera and 27.000 species (SCHOLTZ & GREBENNIKOV 2005). This family includes several groups with significant impact on human activities such as those commonly referred to as scarabs, chafers, flower beetles, leaf chafers, dung beetles when adults, or white grubs when larva. They are extremely variable in shape, presence and type of coverage of integuments (hairs, spines, scales), and size, which is comprised between about 1 and 170 mm.

Aphodiinae is a subfamily of about 1.500 species of small to moderate-sized beetles. They are generally cylindrical in shape and seldom show much sexual dimorphism. The abdominal spiracles are located in the membranous parts of the dorsum, the 3-segmented antennal club is covered with microsetae, and the metatibiae have two apical spurs. Most aphodiines are dung feeding, but a few are root feeding and may be serious pests of pastures, for example *Aphodius howitti* HOPE in Australia. Other species feed on decaying vegetable matter, or can be found in termites and ants nests, and some in mammal burrows (BOOTH et al. 1990).

Scarabaeinae is a large-sized group, mainly abundant in the tropics. The abdominal spiracles are all in the membranous parts of the dorsum (the laparostict condition), at least the last antennal segment is densely covered with microsetae, and the metatibiae have only a single apical spur. Strong sexual dimorphism is often shown in the form of horns, tubercles, and excavations on the head, pronotum, and sometimes other parts of the body. Most scarabaeines feed on dung, sometimes where it lays, and sometimes in special chambers underground. Species belonging to some genera, for example *Scarabaeus* LINNAEUS, *Gymnopleurus* ILLIGER, and *Sisyphus* LATREILLE, form dung into balls and roll them away to be buried. Two Indian species, *Onthophagus unifasciatus* (SCHALLER) and *O. bifasciatus* (FABRICIUS), sometimes could cause the medical condition known as scarabiasis in which living beetles are passed with the faeces of children (BOOTH et al. 1990).

Turkey is biogeographically one of the most interesting countries in the West Palaearctic region. Some faunistic studies on these subfamilies in the Turkey have been made by BALTHASAR (1953, 1963a, 1963b), PETROVITZ (1963), PITTINO (1982), KIRGIZ (1982, 1987), PEHLIVAN (1988, 1989), LODOS et al (1999), CARPANETO et al. (2000), DELLACASA & KIRGIZ (2002), DELLACASA & DELLACASA (2006), KABAKOV (2006), ROZNER & ROZNER (2009), ZIANI & SAMA (2013) and SÜRGÜT et al. (2014).

The aim of this paper is to present some further records of Aphodiinae and Scarabaeinae from Turkey.

Materials and Methods

Species listed below were collected from different localities of Turkey between 1966 and 2013. In addition, material collected in previous years from other Turkish localities and preserved in Atatürk University, Faculty of Agriculture, Department of Plant Protection, the Entomology Museum, Erzurum, Turkey (EMET) is been also evaluated.

Provinces of the collected specimens are given in alphabetical order in the following list. The material is deposited in the Entomology Museum, Erzurum, Turkey (EMET). Systematic and nomenclature follows LÖBL & LÖBL (2016).

The study was supported by the Atatürk University Scientific Research Fund (Project Number: 2011/339) and is a partial summary of Alper POLAT's PhD thesis (Atatürk University, Institute of Science, Department of Plant Protection), adopted on 31.05.2016.

Results

In this study, 20 species and subspecies from 14 genera of Aphodiinae and 36 species and subspecies from 12 genera of Scarabaeinae are recorded. These records improve the knowledge of the Scarabaeoida fauna of Turkey.

Family S c a r a b a e i d a e LATREILLE, 1802

Subfamily A p h o d i i n a e LEACH, 1815

Tribe Aphodiini LEACH, 1815

Genus *Acanthobodilus* G. DELLACASA, 1983***Acanthobodilus immundus* (CREUTZER, 1799)**

Material examined: Erzurum: Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2013, ♂, Yakutiye, Atatürk University Field, 1850 m, 20.VI.1996, ♂, 26.VI.1996, ♂, 03.VII.1996, ♀, 14.VII.1996, ♀, 15.VII.1998, ♂, 19.VII.1998, ♀, 26.VII.1997, 2♀♀, ♂, 27.VII.1996, ♀, ♂, 28.VII.1997, ♂, 31.VII.1998, ♀, 05.VIII.1996, ♀, 12.VIII.1996, ♂, 15.VIII.1997, ♂, Karagöbek, N 40°10'18.6", E 41°26'15", 2017 m, 19.V.2013, ♂.

Genus *Acrossus* MULSANT, 1842***Acrossus luridus* (FABRICIUS, 1775)**

Material examined: Erzurum: Aziziye, Karakale, N 40°12'32.9", E 40°58'14.6", 2130 m, 01.V.2012, 2♀♀, 2♂♂, Öltü, 18.IV.1972, 5♂♂, Tortum, 23.V.1972, ♂.

Genus *Amidorus* MULSANT & REY, 1870***Amidorus obscurus obscurus* (FABRICIUS, 1792)**

Material examined: Erzurum: Aziziye, Kuzgun, N 40°10'58", E 41°04'16.4", 2118 m, 03.VI.2012, ♀; Şenkaya, 05.IX.1990, ♀.

Genus *Aphodius* HELLWIG, 1798***Aphodius fimetarius* (LINNAEUS, 1758) s.l.**

Material examined: Artvin: 26.VI.1996, ♀; Diyanbakır: Ergani, 920 m, 25.VII.2013, ♀; Erzurum: Aşkale, Gürkaynak, N 39°55'30.2", E 40°29'52.8", 1852 m, 08.VI.2012, 2♂♂, Aziziye, Kızılale, N 40°11'8.81", E 40°55'49.61", 2175 m, 01.V.2012, 8♀♀, 6♂♂, Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2013, ♂, Yakutiye, Atatürk University Field, N 39°53'51.67", E 41°13'02.07", 1850 m, 10.VII.2011, ♀, ♂, Karagöbek, N 40°10'18.6", E 41°26'15", 2017 m, 19.V.2013, ♀, ♂.

Genus *Bodilus* MULSANT & REY, 1870***Bodilus lugens* (CREUTZER, 1799)**

Material examined: Erzurum: Çat, Aşağı Çat, 1950 m, 06.VIII.2010, ♀; Palandöken, 19.VII.1971, ♀, 20.VII.1971, ♂; Yakutiye, Atatürk University Field, 1850 m, 15.VI.1996, ♀, 3.VII.1996, ♀, 14.VII.1996, ♀, 14.VII.1997, ♀, 17.VII.1996, ♀, 17.VII.1997, ♀, 18.VII.1996, ♀, 22.VII.1997, 3♀♀, 24.VII.1996, ♀, 26.VII.1996, ♀, 26.VII.1997, 3♀♀, 30.VII.1996, ♀, 05.VIII.1996, 2♀♀, 06.VIII.1996, ♀, 10.VIII.1997, 3♀♀, 12.VIII.1996, ♀, ♂, 15.VIII.1998, ♀, 18.VIII.1997, ♂, 20.VIII.1997, ♂, 23.VIII.1996, ♀.

***Bodilus punctipennis* (ERICHSON, 1848)**

Material examined: Erzurum: Yakutiye, 20.VII.1971, ♂, Atatürk University Field, 1850 m, 15.VI.1996, ♀, 29.VI.1996, ♂, 14.VII.1996, ♀, 14.VII.1998, ♂, 17.VII.1998, ♂, 22.VII.1997, ♂, 26.VII.1996, ♀, 26.VII.1997, ♂, 30.VII.1996, ♂.

Genus *Calamosternus* MOTSCHULSKY, 1860***Calamosternus granarius* (LINNÉ, 1767)**

Material examined: Erzurum: Yakutiye, 07.VI.1971, 16♀♀, 15♂♂.

Genus *Chilo thorax* MOTSCHULSKY, 1860***Chilo thorax albosetosus* (PITTINO, 1995)**

Material examined: Erzurum: Yakutiye, Atatürk University Field, 03.V.1983, ♂, 20.VI.1996, ♀, 04.VII.1996, ♂, 14.VII.1996, ♂, 18.VII.1996, 2♀♀, 20.VII.1996, ♀, 20.VII.1997, ♀, 26.VII.1997, 2♂♂, 28.VII.1997, 2♂♂, 12.VIII.1996, ♂, 15.VIII.1997, ♂, 3♀♀, 27.VIII.1996, ♀.

***Chilo thorax melanostictus* (W. SCHMIDT, 1840)**

Material examined: Erzurum: Yakutiye, Atatürk University Field, 1850 m, 04.VII.1996, ♀.

Genus *Colobopterus* MULSANT, 1842***Colobopterus erraticus* (LINNAEUS, 1758)**

Material examined: Erzurum: Aziziye, Kuzgun, N 40°10'58", E 41°04'16.4", 2118 m, 03.VI.2012, ♀, 2♂♂, Çat, Yavi, 1844 m, 22.VII.2011, ♂, Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2013, 14♀♀, 8♂♂, Şenkaya, Değirmenlidere, N 40°45'54", E 42°33'49.6", 2139 m, 15.VI.2013, ♂, Tekman, Hacıömer, N 39°36'05.3", E 41°46'47.42", 1871 m, 16.VII.2011, ♀, 3♂♂, Yakutiye, Karagöbek, N 40°10'18.6", E 41°26'15", 2017 m, 19.V.2013, ♀, ♂.

Genus *Esymus* MULSANT & REY, 1870***Esymus merdarius* (FABRICIUS, 1775)**

Material examined: Erzurum: Aziziye, Kuzgun, N 40°10'58", E 41°04'16.4", 2118 m, 03.VI.2012, ♀.

***Esymus pusillus pusillus* (HERBST, 1789)**

Material examined: Erzurum: Aziziye, Kuzgun, N 40°10'58", E 41°04'16.4", 2118 m, 03.VI.2012, ♀, Yakutiye, Karagöbek, N 40°10'18.6", E 41°26'15", 2017 m, 19.V.2013, ♂.

Genus *Eudolus* MULSANT & REY, 1870***Eudolus quadriguttatus* (HERBST, 1783)**

Material examined: Erzurum: Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2013, ♂.

Genus *Euheptaulacus* G. DELLACASA, 1983***Euheptaulacus carinatus carinatus* (GERMAR, 1824)**

Material examined: Artvin: Yusufeli, 15.VIII.1997, ♂; Erzurum: Yakutiye, Atatürk

Üniversity Field, 1850 m, 14.VII.1996, ♀, 14.VII.1998, ♀, 16.VII.1998, ♀, ♂, 26.VII.1997, ♀, 28.VII.1997, ♀, 2♂♂, 31.VII.1998, 2♀♀, 05.VIII.1996, ♂, 06.VIII.1996, 2♂♂, 10.VIII.1997, ♂, 23.VIII.1996, 2♂♂.

***Euheptaulacus sus* (HERBST, 1783)**

M a t e r i a l e x a m i n e d : Erzurum: Yakutiye, Atatürk Üniwersity Field, 1850 m, 14.VII.1996, 2♂♂, 16.VII.1998, ♂, 20.VII.1997, ♂, 24.VII.1996, 3♀♀, 2♂♂, 26.VII.1997, ♀, ♂, 28.VII.1997, ♂, 05.VIII.1996, ♂, 12.VIII.1996, 2♀♀, 2♂♂, 18.VIII.1997, 2♂♂, 23.VIII.1997, ♂, 27.VIII.1996, ♂.

Genus *Eupleurus* MULSANT, 1842

***Eupleurus subterraneus subterraneus* (LINNAEUS, 1758)**

M a t e r i a l e x a m i n e d : Adana: 07.VI.1988, ♂; Elazığ: Harput, Miyadin, Şimal Mezra, 20.VIII.1973, ♀; Erzurum: Oltu, 18.IV.1972, 2♂♂, Palandöken, Börekli, 1822 m, 22.VII.2011, ♀, ♂, Yakutiye, 22.VII.1983, ♂, Atatürk Üniwersity Field, 1850 m, 15.VIII.1997, ♂, Karagöbek, N 40°10'18.6", E 41°26'15", 2017 m, 19.V.2013, ♀.

Genus *Melinopterus* MULSANT, 1842

***Melinopterus prodromus* (BRAHM, 1790)**

M a t e r i a l e x a m i n e d : Erzurum: Aziziye, Karakale, N 40°12'32.9", E 40°58'14.6", 2130 m, 01.V.2012, 19♂♂, 23♀♀, Kızılkale, N 40°11'8.81", E 40°55'49.61", 2175 m, 01.V.2012, 10♂♂, ♀.

***Melinopterus punctatosulcatus hirtipes* (FISCHER VON WALDHEIM, 1844)**

M a t e r i a l e x a m i n e d : Erzurum, Aziziye, Karakale, N 40°12'32.9", E 40°58'14.6", 2130 m, 01.V.2012, 5♀♀, 3♂♂, Oltu, 18.IV.1972, ♂, Pasinler, N 39°58'32.66", E 41°37'31.54", 1684 m, 09.V.2012, ♀.

Genus *Nialus* MULSANT & REY, 1870

***Nialus varians* (DUFTSCHMID, 1805)**

M a t e r i a l e x a m i n e d : Erzurum: Yakutiye, Atatürk Üniwersity Field, 1850 m, 22.VII.1997, ♀, 1850 m, 24.VII.1996, ♂, 26.VII.1996, ♀, ♂, 28.VII.1997, ♀, 5.VIII.1996, ♀, 12.VIII.1996, ♀.

Genus *Otophorus* MULSANT, 1842

***Otophorus haemorrhoidalis* (LINNAEUS, 1758)**

M a t e r i a l e x a m i n e d : Ordu: Çakırlı, 1200 m, 07.VIII.2013, ♂; Rize: Çamlıhemşin Ayder Plateau, 1200 m, 30.VII.2000, ♀.

Subfamily *S c a r a b a e i n a e* LATREILLE, 1802

Tribe *Coprini* LEACH, 1815

Genus *Copris* GEOFFROY, 1762

***Copris (Copris) felschei* REITTER, 1892**

Material examined: Erzurum: Pasinler, 10.VI.1983, ♀.

***Copris (Copris) hispanus cavolini* (PETAGNA, 1792)**

Material examined: Adana: 28.VII.1992, ♂; Diyarbakır: Silvan, 825 m, 17.IV.1995, ♂; Sanlıurfa: Ceylanpınar, 25.V.1991, ♂.

***Copris (Copris) lunaris* (LINNAEUS, 1758)**

Material examined: Ankara: Çamlıdere, 05.VIII.1994, ♂, 15.IX.1994, ♂; Düzce: Akçakoca, 10.IX.2010, ♀; Erzurum: Narman, 15.V.1966, ♀, 05.VII.1980, ♂, Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2013, ♂, Büyükdere, 28.VI.1990, ♀; Giresun: 15.VIII.1995, ♀; İstanbul: Sarıyer, Rumelikavağı, 20.VII.1993, ♂; Kahramanmaraş: Elbistan, 1050 m, 5.VIII.1998, ♀; Samsun: Çarşamba, 23.VIII.1995, ♀.

Tribe Gymnopleurini LACORDAIRE, 1856**Genus *Gymnopleurus* ILLIGER, 1803*****Gymnopleurus (Gymnopleurus) flagellatus asperatus* MOTSCHULSKY, 1849**

Material examined: Erzincan: Kemaliye, 20.VIII.1979, 9♀♀, 12♂♂; Erzurum: Narman, 38 T 02.4°95'96", 44°76'64.1", 2200 m, 27.VI.2013, 2♂♂, Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2013, 4♀♀, 12♂♂, Tortum, Derekapı, 09.VI.1974, ♀, ♂, Yakutiye, 25.VII.1966, 6♀♀, 5♂♂, 25.VII.1986, ♀, ♂, 25.VIII.1966, ♀.

***Gymnopleurus geoffroyi* (FUESSLY, 1775)**

Material examined: Canakkale: Biga, Karabiga, Meşelik, 15.V.2010, ♀; Denizli: Çivril, Çakallar, 960 m, 08.VII.2013, ♀, ♂; Diyarbakır: Silvan, 825 m, 17.IV.1995, ♀; Erzincan: Kemaliye, 20.VIII.1979, ♂; İzmir: Ödemiş, 19.VII.1990, ♂, 29.VII.1990, ♀, ♂; Konya: Gürağaç, 10.VII.1998, ♀, ♂.

***Gymnopleurus mopsus mopsus* (PALLAS, 1781)**

Material examined: Artvin: 15.VII.1997, ♀; Elazığ: 1067 m, 15.VII.1995, ♂; Erzurum: İspir, Değirmenli, 1421m, 30.V.2011, 25♀♀, 27♂♂, Öztoprak, N 40°30'36.38", E 41°02'42.8", 1225 m, 30.V.2011, 13♀♀, 29♂♂, Narman, Kilimli, N 40°19'50.9", E 41°58'50.02", 1711 m, 16.VII.2012, 3♀♀, 5♂♂, Tekman, Hacıömer, N 39°36'05.3", E 41°46'47.42", 1871 m, 16.VII.2011, ♂, Yakutiye, 25.VII.1966, 2♀♀, 3♂♂, 25.VII.1986, ♂, Dumlulu, Yeşilyurt, N 40°04'40.76", E 41°21'43.13", 1804 m, 09.VII.2012, 15♀♀, 5♂♂; Mersin: Tarsus, 10.IX.1995, ♂.

Tribe Oniticeellini H. J. KOLBE, 1905**Genus *Euoniticeillus* A. JANSSENS, 1953*****Euoniticeillus fulvus* (GOEZE, 1777)**

Material examined: Bingöl: Ilıcalar, İçpınar, Derik Mezrası, Paşaçeşmesi, 1100 m, 28.V.2006, ♂; Erzincan: 18.VII.1997, ♂; Erzurum: Aziziye, Dallıkavak, N 40°10'32.8", E 40°58'04.8", 2320 m, 14.VI.2013, ♀, Kuzgun, N 40°10'58", E 41°04'16.4", 2118 m, 03.VI.2012, 2♀♀, ♂, Oltu, Sütkans, 25.VI.1996, ♀, Pasinler, N 39°58'32.66", E 41°37'1.54", 1684 m, 19.IX.2009, 2♂♂, Tekman, Hacıömer, N 39°36'05.3", E 41°46'47.42", 1871 m, 16.VII.2011, ♂,

Yakutiye, Atatürk University Field, N 39°53'51.67", E 41°13'02.07", 1850 m, 10.VII.2011, ♂, Karagöbek, N 40°10'18.6", E 41°26'15", 2017 m, 19.V.2013, 2♂♂; Kahramanmaraş: Elbistan, 1050 m, 15.VIII.1998, ♀.

Genus *Paroniticellus* BALTHASAR, 1963

Paroniticellus festivus (STEVEN, 1809)

Material examined: Erzurum: Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2013, ♂.

Tribus Onitini LAPORTE, 1840

Genus *Cheironitis* VAN LANSBERGE, 1875

Cheironitis haroldi (BALLION, 1871)

Material examined: Erzurum: Tekman, Hacıömer, N 39°36'05.3", E 41°46'47.42", 1871 m, 16.VII.2011, ♂.

Cheironitis pamphilus (MENÉTRIES, 1849)

Material examined: Erzurum: Yakutiye, 10.IX.1973, ♀, 26.IX.1984, ♀.

Genus *Onitis* FABRICIUS, 1798

Onitis alexis septentrionalis BALTHASAR, 1942

Material examined: Adana: 29.VII.1993, ♂, 20.VIII.1993, ♀, 08.IX.1993, ♂, Balcalı, 10.VII.1992, ♂, Kozan, 11.VII.1983, ♀, 12.VIII.1983, ♂, 10.IX.1983, 2♀♀, Savruk, 02.VII.1996, ♀; Adıyaman: Kahta, Elbeyi, 650 m, 03.VII.2011, ♂, 650 m, 20.VIII.2011, ♀; Aydın: Çine, 700 m, 13.VII.2010, ♀; Mersin: 04.IX.1992, ♀.

Onitis damoetas STEVEN, 1806

Material examined: Erzurum: Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 16.V.2013, ♂.

Tribe Onthophagini BURMEISTER, 1846

Genus *Caccobius* C.G. THOMSON, 1859

Caccobius (Caccobius) histeroides (MÉNÉTRIES, 1832)

Material examined: Balıkesir: Madra Mountain, N 39°21'0.08", E 027°13'98.1", 19.VI.2012, ♀; Erzurum: İspir, N 40°29'20.4", E 41°00'31", 1236 m, 22.VI.2011, ♀.

Caccobius (Caccobius) mundus (MÉNÉTRIES, 1839)

Material examined: Erzurum: Oltu, Toprakkale, 1436 m, 23.VI.2011, ♀.

***Caccobius schreberi* (LINNÉ, 1767)**

Material examined: Erzurum: Aşkale, Topalçavuş, N 39°55'33.2", E 40°34'33", 1639 m, 08.VI.2012, ♀, Aziziye, Kuzgun, N 40°10'58", E 41°04'16.4", 2118 m, 03.VI.2012, 3 ♀ ♀, Çat, Yavi, 22.VII.2011, 1844 m, 5 ♀ ♀, ♂, İspir, N 40°29'20.4", E 41°00'31", 1236 m, 22.VI.2011, 4 ♀ ♀, ♂, Öztoprak, N 40°30'36.38", E 41°02'42.8", 1225 m, 30.V.2011, 2 ♀ ♀, Palandöken, 20.VII.1971, ♂, Tortum, 10.IV.1972, ♂, 25.V.1972, 2 ♀ ♀, Yakutiye, Atatürk University Field, N 39°53'51.67", E 41°13'02.07", 1850 m, 10.VII.2011, ♂, 1800 m, 18.VIII.2010, ♀.

Tribe Onthophagini BURMEISTER, 1846**Genus *Euonthophagus* BALTHASAR, 1959*****Euonthophagus amyntas alces* (FABRICIUS, 1792)**

Material examined: Antalya: Korkuteli, 700 m, 22.VI.2013, ♂; Erzurum: İspir, Öztoprak, N 40°30'36.38", E 41°02'42.8", 1225 m, 30.V.2011, ♂.

***Euonthophagus gibbosus* (SCRIBA, 1790)**

Material examined: Antalya: Elmalı, Gömbe, 1250 m, 28.VII.2013, ♀, Korkuteli, 700 m, 22.VI.2013, ♂, Kargın, 820 m, 05.IX.2013, 3 ♀ ♀, 820 m, 18.VIII.2013, ♀, Yukarı Beymelek, 170 m, 29.VI.2013, ♀; Erzurum: İspir, Öztoprak, N 40°30'36.38", E 41°02'42.8", 1225 m, 30.V.2011, ♀, ♂, Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2012, ♀, Tortum, 10.IV.1972, ♀, 26.V.1972, ♂, Yakutiye, Atatürk University Field, 1800 m, 05.VIII.2010, ♀, Dumlü, Yeşilyurt, N 40°04'40.76", E 41°21'43.13", 1804 m, 09.VII.2012, ♀.

Genus *Onthophagus* LATREILLE, 1802***Onthophagus (Furconthophagus) furcatus* (FABRICIUS, 1781)**

Material examined: Erzurum: Oltu, 25.VI.1971, ♀, Olur, Köprübaşı, 973 m, 30.VII.2011, ♀, Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2013, ♀, Tortum, 10.IV.1972, ♂; Mersin: Erdemli, Üçtepe, 120 m, 25.IX.2012, ♀; Tunceli: Pülümür, Boğalı, 1412 m, 07.VIII.2011, ♀.

***Onthophagus (Onthophagus) illyricus* (SCOPOLI, 1763)**

Material examined: Ankara: 31.VII.1997, ♀; Erzurum: Uzundere, Gölbaşı, 1150 m, 14.VIII.2012, ♀; Osmaniye: Kadirli, Kabayar, 14.VII.1997, 3 ♀ ♀, ♂, 15.VII.1997, ♂, 16.VII.1997, ♀, 17.VII.1997, ♀, 2 ♂ ♂.

***Onthophagus (Onthophagus) taurus* (SCHREBER, 1759)**

Material examined: Antalya: Elmalı, Gömbe, 1250 m, 28.VII.2013, ♂, Korkuteli, Kargın, 820 m, 05.IX.2013, ♂; Erzincan: 10.IX.1996, ♂; Eskişehir: 25.VI.1996, ♀; Konya: 9.VII.1995, ♂; Muş: 05.VII.1996, ♀, 24.VII.1996, ♂, Bağlar, 15.VII.1996, ♀.

***Onthophagus (Palaeonthophagus) carpanetoi* PITTINO, 1982**

Material examined: Bahçesir: Madra Mountain, N 39°25'65.6", E 027°14'86.1", 19.VI.2012, ♀, N 39°21'0.08", E 027°13'98.1", 19.VI.2012, ♀; Erzurum: İspir, Köprübaşı, 06.VI.1980, ♂.

***Onthophagus (Palaeonthophagus) coenobita* (HERBST, 1783)**

Material examined: Balıkesir: Madra Mountain, N 39°23'84.2", E 027°15'0.56", 19.VI.2012, ♀.

***Onthophagus (Palaeonthophagus) cruciatus* MÉNÉTRIES, 1832**

Material examined: Erzurum: Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2013, ♂.

***Onthophagus (Palaeonthophagus) dorsosignatus* d'ORBIGNY 1898**

Material examined: Erzurum: İspir, N 40°29'20.4", E 41°00'31", 1236 m, 22.VI.2011, ♂.

***Onthophagus (Palaeonthophagus) fracticornis* (PREYSSLER, 1790)**

Material examined: Erzurum: Aziziye, Kuzgun, N 40°10'58", E 41°04'16.4", 2118 m, 03.VI.2012, 3 ♀, Oltu, Başaklı, 20.V.1972, ♀, Pasinler, Rabat, 2400 m, 13.VI.1996, ♀, Yakutiye, Atatürk University Field, N 39°53'51.67", E 41°13'02.07", 1850 m, 10.VII.2011, ♀; Tunceli: Mazgirt, Kalaycı, 950 m, 25.III.2010, ♀.

***Onthophagus (Palaeonthophagus) gibbulus rostrifer* REITTER, 1892**

Material examined: Erzurum: Aziziye, Kuzgun, N 40°10'58", E 41°04'16.4", 2118 m, 03.VI.2012, ♀, ♂.

***Onthophagus (Palaeonthophagus) grossepunctatus* REITTER, 1905**

Material examined: Balıkesir: Madra Mountain, N 39°21'0.08", E 027°13'98.1", 18.VII.2012, ♂.

***Onthophagus (Palaeonthophagus) lucidus* (ILLIGER, 1800)**

Material examined: Antalya: Korkuteli, Kargın, 820 m, 18.VIII.2013, ♀.

***Onthophagus (Palaeonthophagus) medius* (KUGELANN, 1792)**

Material examined: Erzurum: Pasinler, Çöğender, 09.VI.2011, 1743 m, ♀, Tortum, 25.VI.1972, ♂, Yakutiye, Karagöbek, N 40°10'18.6", E 41°26'15", 2017 m, 19.V.2013, 2 ♀.

***Onthophagus (Palaeonthophagus) ruficapillus* BRULLÉ, 1832**

Material examined: Erzincan: Kemah, 02.VIII.1980, ♂; Erzurum: Çat, 1898 m, 06.VIII.2010, ♀, Yavi, 1844 m, 22.VII.2011, 2 ♀, 4 ♂, Horasan, Hacıahmet, 1823 m, 13.VIII.2010, ♀, İspir, N 40°29'20.4", E 41°00'31", 1236 m, 22.VI.2011, 4 ♀, 3 ♂, Köprüköy, Eyüpler, 1245 m, 26.VI.2011, ♂, Narman, Göllü, 1803 m, 30.VII.2011, ♀, Mahmutçavuş, N 40°20'18.7", E 41°55'36.4", 1568 m, 16.VII.2012, ♂, Oltu, 25.VI.1971, ♀, 3 ♂, Yakutiye, 02.VI.1971, ♂, 07.VI.1972, ♂, 20.VII.1971, ♂, Atatürk University Field, N 39°53'51.67", E 41°13'02.07", 1850 m, 10.VII.2011, 2 ♀, ♂, Gökçeyamaç, 20.VI.1970, ♀; Konya: Güneysınır, 1017 m, 21.VI.1999, ♀; Ordu: Çakırlı, 1200 m, 23.VIII.2013, ♀.

***Onthophagus (Palaeonthophagus) sacharovskii* OLSOUFIEFF, 1918**

Material examined: Erzurum: Palandöken, Nenehatun, 1900 m, 21.IV.2002, ♀.

***Onthophagus (Palaeonthophagus) truchmenus* KOLENATI, 1846**

Material examined: Erzurum: Aziziye, Ilıca, Harmanlar, 25.VIII.2007, ♀, Kuzgun, N 40°10'58", E 41°04'16.4", 2118 m, 03.VI.2012, ♀, Pasinler, Tımar, N 40°02'53.5", E 41°44'40.7", 1834 m, 24.V.2013, ♀.

***Onthophagus (Palaeonthophagus) vacca* (LINNAEUS, 1767)**

Material examined: Erzurum: Tortum, 25.VI.1972, ♀.

Tribe Scarabaeini LATREILLE, 1802**Genus *Ateuchetus* BEDEL, 1892*****Ateuchetus armeniacus* (MÉNÉTRIES, 1832)**

Material examined: Bitlis: 27.V.1983, ♂, 27.V.1989, ♂; Erzurum: Oltu, Sütkans, 18.VI.1996, ♀, Tortum, Derebaşı, 09.VI.1974, ♀, 09.VI.1994, ♀, Derekapı, 09.VI.1974, 2♂♂; Kars: Sarıkamış, Karakurt, N 40°07'54.3", E 042°20' 94.1", 1501 m, 17.IV.2002, ♀, ♂.

Genus *Scarabaeus* LINNAEUS, 1758***Scarabeus pius* (ILLIGER, 1803)**

Material examined: Bilecik: Gölpazarı, Dereli, 490 m, 25.VI.2010, ♀; Burdur: 1025 m, 25.VII.2011, ♀; Denizli: Çivril, Çakallar, 960 m, 08.VII.2013, ♀; Tunceli: Mazgirt, Kalaycı, 950 m, 25.III.2010, ♀, 1000 m, 28.IV.2010, ♂.

***Scarabaeus typhon* (FISCHER VON WALDHEIM, 1823)**

Material examined: Ağrı: Doğubeyazıt, İshak Paşa Sarayı, 1936 m, 10.VIII.2013, 2♂♂, 1936 m, 27.VIII.2013, ♂; Burdur: 1025 m, 22.VI.2011, ♂; Denizli: Serinlihisar, 1000 m, 10.VII.2011, ♂, 1000 m, 16.VII.2011, ♂, 1000 m, 28.VII.2011, 2♂♂, 1000 m, 25.VIII.2011, ♂, 1000 m, 02.IX.2011, 2♂♂, 1000 m, 13.IX.2011, ♂; Diyarbakır: Silvan, 17.IX.1995, ♂; Elazığ: 1067 m, 18.VIII.1995, ♂, Harput, Miyadin, Şimal Mezra, 15.VIII.1973, ♂; Erzurum: Palandöken, 28.VII.1994, ♂; İğdir: 25.I.1971, ♂, 21.V.1969, ♂, 25.VI.1971, ♂, 28.VI.1971, ♀, 9.IX.1985, ♂, Devlet Üretme Çiftliği, 01.IV.1977, ♂, 21.IV.1977, 2♂♂; Kayseri: Sarız, 07.VII.1990, ♀, 13.XII.1990, ♂; Konya: Çumra, Bakkalbaşı, 07.VIII.1998, 2♂♂, Güneysınır, Güragaç, 1071 m, 04.VII.1999, ♂; Mersin: Gülnar, Demirözü, 1300 m, 20.VIII.201, ♂, Tarsus, 08.VIII.1994, ♂; Muğla: Köyceğiz, 18.VII.1996, ♂; Mus: Devlet Üretme Çiftliği, 01.VI.1972, ♂; Nevşehir: 1120 m, 15.VIII.2011, ♂, Nar, 26.IX.2009, ♂; Niğde: Bor, 21.VIII.1990, ♂.

Tribe Sisyphini MULSANT, 1842**Genus *Sisyphus* LATREILLE, 1806*****Sisyphus (Sisyphus) schaefferi schaefferi* (LINNAEUS, 1758)**

Material examined: Adana: Balcalı, 13.VII.2011, ♀; Amasya: 14.VII.1983, ♂, 14.VII.1993, ♀; Erzurum: Dumlulu, Muratgeldi, 05.VIII.1997, ♀, İspir, N 40°29'20.4", E 41°00'31", 1236 m, 22.VI.2011, ♀; Mus: 15.V.1970, ♀, 15.V.1973, 2♀♀.

Acknowledgments

We would like to thank all our colleagues that in previous years collected material from different localities of Turkey. The study was supported by the Atatürk University Scientific Research Fund (Project Number: 2011/339).

Zusammenfassung

Vorliegende Arbeit behandelt Aufsammlungen von Aphodiinae und Scarabaeinae (Coleoptera, Scarabaeidae) aus unterschiedlichen türkischen Gebieten im Untersuchungszeitraum 1966 bis 2013. Als Ergebnis ergaben sich der Nachweis von 20 Arten aus 14 Gattungen Aphodiinae sowie 36 Arten und Unterarten aus 12 Gattungen von Scarabaeinae.

References

- BALTHASAR V. (1953): Wissenschaftliche Ergebnisse der zoologischen Expedition des National-Museums in Prag nach der Türkei. — *Acta Entomologica Musei Nationalis Pragae* **28**: 19-26.
- BALTHASAR V. (1963a): Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region. Coleoptera: Lamellicornia. Band 1.1. Scarabaeinae, 2. Coprinae. — Verlag der Tschechoslowakischen Akademie der Wissenschaften, Prag, pp 391.
- BALTHASAR V. (1963b): Monographie der Scarabaeidae und Aphodiidae der Palaearktischen und Orientalischen Region. Coleoptera: Lamellicornia. Band II. Coprinae (Onitini, Oniticeellini, Onthophagini). — Tschechoslowakischen Akademie der Wissenschaften, Prag, pp 627.
- BOOTH R.G., COX M.L. & R.B. MADGE (1990): The guides to insects of importance to man. 3. Coleoptera. — International Institute of Entomology, pp 384.
- CARPANETO G., PIATTELLA E. & R. PITTINO (2000): The scarab beetles of Turkey: an updated checklist and chorotype analysis (Coleoptera, Scarabaeoidea). — *Biogeographia* **21**: 217-240.
- DELLACASA M. & T. KIRGIZ (2002): Records of Aphodiinae from Edirne province and neighbouring areas (European Turkey). — *Italian Journal of Zoology* **69**: 71-82.
- DELLACASA G. & M. DELLACASA (2006): Fauna d'Italia Coleoptera Aphodiidae, Aphodiinae. Edizioni calderini, Bologna, pp 484.
- KABAKOV O.H. (2006): Scarab Beetles Subfamily Scarabaeinae (Coleoptera: Scarabaeidae) of Russia and Adjacent Countries. — Moscow, KMK Scientific Press Ltd., pp 374.
- KIRGIZ T. (1982): Taxonomic investigations on fauna of Coleoptera (Scarabaeidae) dung beetles of Adana province and its surroundings. — Cukurova University Faculty of Basic Sciences, Master Thesis, pp 58.
- KIRGIZ T. (1987): Coprinae (Coleoptera: Scarabaeidae) Fauna of Adana and Hatay provinces and vicinities. — *The Journal of Firat University* **2** (2): 51-57.
- LÖBL I. & D. LÖBL (2016) (eds): Catalogue of Palaearctic Coleoptera. Volume 3. Scarabaeoidea, Scirtoidea, Dascilloidea, Buprestoidea, Byrrhoidea. — Revised and updated edition. Leiden, Boston: Brill. **3** (2): 983 pp.
- LODOS N., ÖNDER F., PEHLIVAN E., ATALAY R., ERKİN E., KARSAVURAN Y., TEZCAN S. & S. AKSOY (1999): Faunistic studies on Scarabaeoidea (Aphodiidae, Cetoniidae, Dynastidae, Geotrupidae, Glaphyridae, Hybosoridae, Melolonthidae, Ochodaeidae, Rutelidae, Scarabaeidae) (Coleoptera) of Western Black Sea, central Anatolia and Mediterranean Regions of Turkey. — *Ege University Basimevi, Bornova, İzmir*. pp 72.

- PEHLIVAN E. (1988): Taxonomic studies on Turkey Scarabaeidae (Coleoptera) family. I. *Scarabaeus* L., *Gymnopleurus* ILL., *Sisyphus* LATR. — Turkish Journal of Entomology **12** (4): 221-230.
- PEHLIVAN E. (1989): Taxonomic studies on Turkey Scarabaeidae (Coleoptera) family. II. *Onthophagus* LATR. — Turkish Journal of Entomology **13** (1): 25-42.
- PETROVITZ R. (1963): Neue und interessante Scarabaeidae aus dem vorderen Orient II Teil. — Reichenbachia, Zeitschrift für taxonomische Entomologie des Staatliches Museum für Tierkunde in Dresden **1** (28): 235-267.
- PITTINO R. (1982): Due nuovi *Onthophagus* LATR. Anatolici del gruppo *ovatus* (L.) (Coleoptera, Scarabaeidae). — Fragmenta entomologica **16** (2): 189-203.
- ROZNER I. & G. ROZNER (2009): Additional Data to the Lamellicornia Fauna of Turkey (Coleoptera: Lamellicornia). — Natura Somogyiensis **15**: 69-100.
- SÜRGÜT H., TÜVEN A., VARLI S.V., POLAT A. & S. TEZCAN (2014): An Evaluation on the pitfall trap collected Scarabaeoidea (Coleoptera) species in Western Turkey. — Munis Entomology & Zoology **9** (2): 812-818.
- SCHOLTZ C.H. & V.V. GREBENNIKOV (2005): Scarabaeiformia. — In: BEUTEL R.G. & R.A.B. LESCHEN (eds), Coleoptera, beetles Volume 1: Morphology and systematics (Archostemata, Adephaga, Myxophaga, Polyhaga partim). — Handbuch der Zoologie. Eine Naturgeschichte der Stämme des Tierreichs. Band IV. Arthropoda: Insecta, Teilband **38**, 345-365. Walter de Gruyter, Berlin, pp 567.
- ZIANI S. & G. SAMA (2013): Chorological data on some Geotrupidae, Aphodiidae and Scarabaeidae (Coleoptera: Scarabaeoidea) species collected during some field trips in Turkey. — Munis Entomology & Zoology **8** (1): 458-465.

Authors' addresses:

Dr. Alper POLAT
East Anatolia Agricultural Research Institute
TR-25090, Erzurum, Turkey
E-mail: alperpolat25@hotmail.com

Prof. Dr. Erol YILDIRIM
Atatürk University, Faculty of Agriculture
Department of Plant Protection
TR-25240, Erzurum, Turkey
E-mail: yildirimerol@hotmail.com

Prof. Stefano ZIANI
GeoLab
Via Case di Dozza, 22
I-40026 Imola (BO), Italy
E-mail: stefanoziani@alice.it